

Golden Cross Resources

SUMMARY

The Copper Hill porphyry copper-gold deposit has, at current copper and gold prices, the potential to become an operating mine. A new extraction and recovery model, yielding copper metal, gold bullion, acid and iron, provides a much more robust economic outcome than previous models.

Optimised pit modelling, at US\$2.70/lb for copper and US\$800/oz for gold, indicates that Copper Hill could deliver, after expending A\$420 million in capital costs, a cash flow of A\$360 million over a 20 year mine life (\$18 million per year).

GCR has signed a Memorandum of Understanding with Sinomach Group company, China National Automation Control System Corp (CACs) to conduct a feasibility study at Copper Hill. It is estimated the study will take about one year to complete and cost \$5.8 million.

On completion of a Bankable Feasibility Study, CACS has indicated that it has the capacity to organise project finance and undertake all necessary engineering, procurement, construction and management to take the project through to production and off-take of copper metal in China.

COPPER HILL PROJECT – CONCEPTUAL PIT OPTIMISATION PARAMETERS

	Case 1	Case 2	Case 3
US\$/oz Au	600.00	800.00	1000.00
US\$/lb Cu	1.90	2.70	3.50
DCF (10%) for 8Mtpa ore throughput. Capital of \$420 million deducted	A\$115 million	A\$360 million	A\$542 million
Mill feed million tonnes @ 8Mtpa (diluted) x mine life (years)	108 x 14	156 x 20	167 x 20.9
Capital cost estimate for 8Mtpa mill-crush-float operation then roast, acid plant, leach, SX-EW & CIL for Cu, Au, acid and Fe	A\$420 million		

THE COPPER HILL PROJECT

Copper Hill remains Golden Cross' most advanced project. With in-ground JORC resources containing over 421,000 tonnes of copper and 1.2 million ounces of gold it is a valuable resource for Golden Cross Resources, the people of Molong, the broader Central West community and the state of New South Wales.

Maximising the return from the existing resource is possible if all sulphides can be floated, roasted and converted into acid soluble copper and free gold within an iron oxide-rich roaster calcine. Cathode copper can be produced by Solvent Extraction from the calcine followed by Electro-Winning (SX-EW) with the gold leached by cyanide, recovered by Carbon-in-Leach (CIL) and smelted to gold bullion. Roaster exhaust sulphur dioxide will be captured to produce the necessary sulphuric acid for copper leaching with the excess available for sale. The residual iron oxide calcine should find a ready market in the steel-making industry.

On this basis a complete review of the Copper Hill optimised pits has been undertaken (using cost data supplied by Golden Cross) by Australian Mine Design & Development Pty Ltd (AMDAD) indicating a way forward for the project which delivers an estimated DCF for an operating mine of \$360 million, a mine life of almost 20 years producing 335,000 tonnes of copper metal, over 1.1 million ounces of gold bullion and 3 million tonnes of sulphur. Basic parameters used for the selected model were: 85% recoveries for copper, gold and sulphur, US\$2.70/lb copper, US\$800/oz gold, US\$30/tonne sulphur, \$US:\$A 0.85 and a 10% discount rate. The price/cost assumptions used by AMDAD

and Whittle 4X allow a lower cut-off grade (0.15% copper and 0.3g/t gold) to define additional mineable blocks within the existing 0.2% copper cut-off resource.

Development costs at the Copper Hill site of about \$310 million are now estimated based on an open pit mine with conventional crush-grind-float technology and ore throughput of 8 million tonnes per annum. An additional \$110 million is estimated to build a sulphide roaster, sulphuric acid recovery plant with copper metal recovery using SX-EW technology and gold bullion following cyanidation and CIL. This approach would recover annually, on average, about 17,000 tonnes of copper, about 55,000 ounces of gold and over 450,000 tonnes of sulphuric acid for almost twenty years.

Following a review of Copper Hill production requirements, in Australia and subsequently in China by China National Automation Control System Corp (CACs) personnel, it has been indicated by CACS that considerable savings in capital costs may be realised by CACS fabricating or sourcing all necessary plant and equipment from China and assembling it, in modular form, on site. Access via the existing Copper Hill railway spur from Molong will be of great assistance. CACS is prepared to complete a bankable feasibility study, acceptable to Chinese banks, at a cost to GCR of \$5.8 million. CACS has also indicated interest in a copper off-take arrangement.

RESOURCE & ECONOMICS

The key parameters of the Copper Hill resource and model cases are summarised in the tables below. These take into account on-site concentrate production then shipping by rail to a roaster-acid plant complex for copper and gold leaching with recoveries by electro-winning and carbon-in-leach technologies respectively.

COPPER HILL PROJECT – JORC-COMPLIANT RESOURCES AT 0.2% COPPER CUT-OFF GRADE

Category	Mt	% Cu	g/t Au	kt Cu	Moz Au
Measured – 13%	16.9	0.39	0.429	66	0.23
Indicated – 50%	66.9	0.325	0.288	217	0.62
Inferred – 37%	48.7	0.284	0.225	138	0.35
Total – 100%	133	0.318	0.283	421	1.20

Using a range of metal prices, mining/processing costs and throughput assumptions – as set out in the table above and discussed in more detail below – several operating Discounted Cash Flows (DCF's) were estimated, (Cases 1, 2 and 3) from which the capital costs for mill, plant and all treatment and processing to saleable product, including infrastructure, were deducted. Mining equipment leasing costs are included.

The pit optimisation modelling was a comprehensive process by AMDAD using Whittle 4X. All assumptions have been made using previous mining studies, costs from similar operations and in-house data gathering. Further inputs: Pit wall slope 45°, strip ratio range 0.5 to 0.2:1, mining costs \$1.17 to \$1.77/tonne, processing cost to concentrate \$7.40/tonne, concentrate rail freight \$32/tonne (10% moisture content) with treatment and marketing costs estimated at \$112/dry metric tonne concentrate.

The project requires current metal prices to be sustained in the long term. The capital cost estimates for process plant and infrastructure for an 8Mtpa operation have to be achieved, or bettered; CACS has the ability to make substantial savings here. For the roaster, joint ventures with other sulphide suppliers will be considered in sharing construction

and operating costs. Acid sales will be critical to the project's success.

Copper Hill has a low waste:ore strip ratio and good metallurgical characteristics. Current metallurgical tests indicate that it should be possible to recover better than 85% of both the copper and gold put through the mill. The concentrate is 'clean' with no deleterious elements present at significant levels. Copper Hill's mineralised rock has a low bond work index (17.5) indicating a short residence time in the grinding ball or SAG mill with consequent energy savings.

The Copper Hill project has not yet sought water entitlements but management envisages using local aquifers and building a pipeline from Lake Burrendong, 50 kilometres to the northeast.

ENVIRONMENTAL BENEFITS

There are environmentally positive aspects emerging from the proposed process. The flotation of all sulphides to feed the roaster brings the environmental benefit of cleaner tailings. The roasting process is autogenous and self-sustaining using the sulphides as fuel. The sulphur dioxide exhaust, essential for acid production, will be captured to the maximum extent possible. The roasting process itself generates considerable heat which may be used for electrical power generation. Carbon credits should be obtainable.

COMMUNITY AND INFRASTRUCTURE

Copper Hill is very well placed in regard to infrastructure; it lies 5 kilometres north of Molong (population 1,600) and the towns of Orange (pop. 40,000) and Wellington (pop. 10,000) lie 40 kilometres southeast and 60 kilometres north respectively. A large percentage of the workforce is likely to come from these and other nearby towns and from rural properties in the district.

A workforce of about 350 tradesmen, miners and plant operators is estimated for the initial construction and mining/processing, stabilising at about 250

positions over the life of the project. Additionally, between 100 to 150 personnel will be required to run the acid plant and copper-gold recovery plants with as many again required during the construction phase.

Support for the project by Cabonne Shire Council and the local residents remains encouraging. The district has excellent capacity for construction and fabrication. Major mines such as Cadia-Ridgeway and Northparkes operate in the region injecting, between them, over \$150 million into their local economies. Local construction, maintenance facilities and supply chains are well established.

Other key infrastructure attributes are:

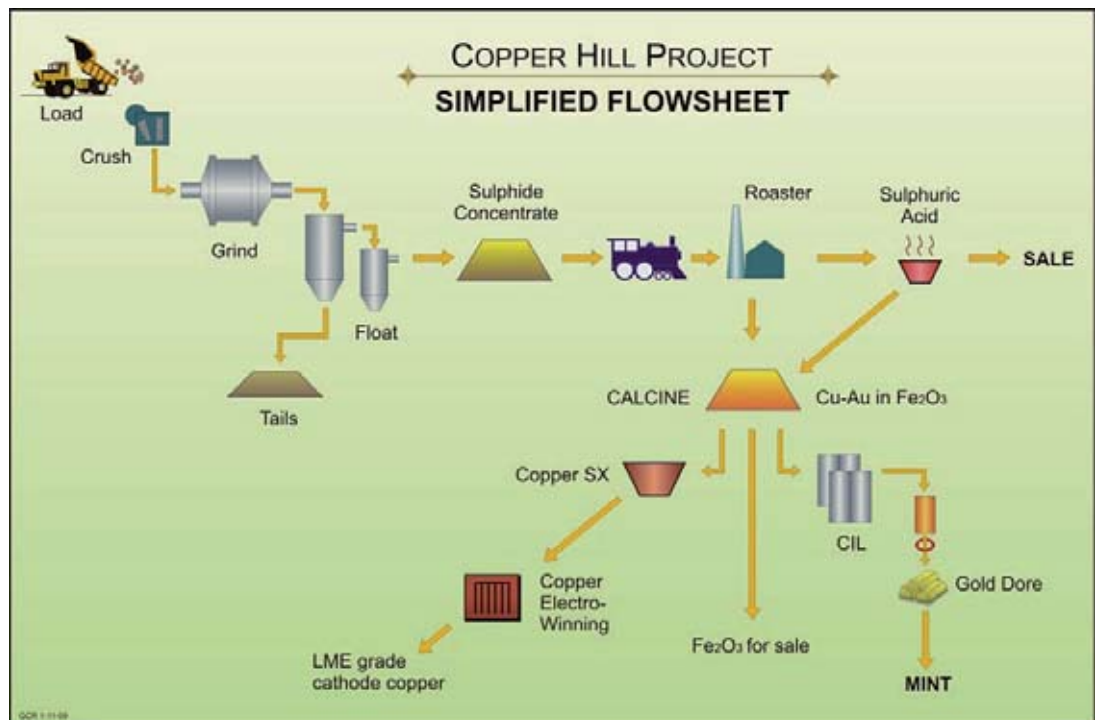
- ▶ The Mitchell Highway is adjacent to the project area;
- ▶ The former Orange to Dubbo railway line, which is suitable for inbound construction materials and outbound concentrate trucks, terminates beside Copper Hill; and
- ▶ A 132kv power sub-station lies on the eastern outskirts of Molong only 4.5 kilometres from Copper Hill.
- ▶ Water rights have not been sought or secured at this time. Studies

will commence shortly to determine the best way forward.

In South Australia a preliminary meeting and regional tour with the Southern Flinders Ranges Development Board in Port Pirie has demonstrated the benefits of Port Pirie as a potential site for the Roaster - Acid Plant - SX-EW - CIL complex. Vacant land is available close to water, power, road and rail within the Port Pirie precinct. A skilled workforce is resident within the area and the Southern Flinders Ranges Development Board (SFRDB) made it clear that support would be available if the project goes ahead. Standard gauge rail track links directly between Molong and Port Pirie.

At a meeting at State Government level, senior personnel from Primary Industries and Resources South Australia gave in-principle support for the concept. The South Australian government welcomes new projects which will create employment, particularly in regional centres.

Additionally, sulphuric acid consumption in South Australia is predicted to increase substantially with the expansion of the Olympic Dam mine and plant, the increasing number of in situ leaching (ISL) uranium deposits coming on stream. Further acid sale potential exists with rare earth and phosphate treatment plants under consideration within South Australia.



EXPLORATION

Funding is now available for an expanded exploration effort and a 4,000 metre drilling program, including deep drilling beyond 350 metres depth, has been planned beneath Copper Hill, at Buckleys Hill (Copper Hill North) and at the higher grade Wattle Hill Zone to the south. GCR has re-commenced drilling at Copper Hill.

GCR will continue its exploration activities at Burra and Cargo in NSW, at its South Australian tenements and at Mulga Tank in Western Australia. Exploratory drilling is under consideration on GCR's Queensland coal tenements. Overseas, activities in Panama are on hold, subject to tenement grant but new copper and copper-gold opportunities are being investigated there and elsewhere in the Americas and southern Africa.

GCR's joint venturers, Argent Minerals, MMG Australia and Legend International have maintained active and successful exploration activities on GCR's projects in NSW (base & precious metals) and Queensland (phosphate).